CHAPTER 2 - ALTERNATIVES

This chapter describes the development of the Proposed Action and all alternatives that were considered in connection with this Environmental Study, including the No-action Alternative. It also sets forth the process by which alternatives were screened and the reason why other alternatives were eliminated from further study. This section includes an analysis of future transportation conditions with and without the proposed project.

2.1 ALTERNATIVE DEVELOPMENT

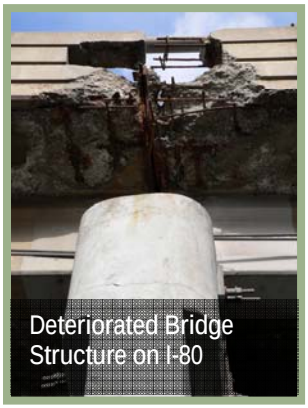
The development of alternatives for this project began with an examination as to the most immediate needs to be addressed in order to maintain I-80 as a functioning roadway, i.e., the deterioration of the pavement and bridge structures discussed in Chapter 1 – Purpose and Need. Because of this need for the project, any potential alternatives that would not include improvements intended to address the structural deficiencies of I-80 were eliminated from consideration on the grounds that they would not meet the most basic need for the project and therefore would not survive a scrutiny based upon purpose and need. See Section 2.2 - Alternatives Eliminated from Consideration.

2.1.1 Proposed Action

The Proposed Action best meets the purpose and need for the project within the existing funding constraints. The Proposed Action includes the following elements (see Figures 2-1 and 2-2):

- Four 12-ft general purpose travel lanes in each direction, a 20-ft center median, 12-ft shoulders on the inside and outside of the roadway, and raised 42-in. barriers in the center median and on the outside shoulders
- Auxiliary lanes in each direction between the State Street and 700 East interchanges and between the 700 East and 1300 East interchanges
- Retaining walls (as needed) to keep roadway within existing right-of-way
- Pavement improvements using crack and seat overlay (with asphalt or concrete)
- Replacement of the existing bridge structures at 300 East, 500 East, 600 East, 700 East, 900 East, and Highland Drive
- Lengthening the on/off ramps at State Street, 700 East, and 1300 East with appropriate modifications to intersections with cross streets
- Additional bridge structures at 600 East and Highland Drive to accommodate the additional length of the new ramps
- Shortening the length of the existing bridge structures at Highland Drive
- Cul-de-sac Driggs Avenue just west of 1300 East
- Improvements to the storm drainage system through cleaning, repairs, and/or relocation of components of the existing drainage systems and adding a new stormwater detention basin within the loop of the 1300 East westbound on-ramp
- Noise mitigation barriers, where appropriate

Replacing Deteriorated Infrastructure


Deteriorated Bridge Structure on I-80

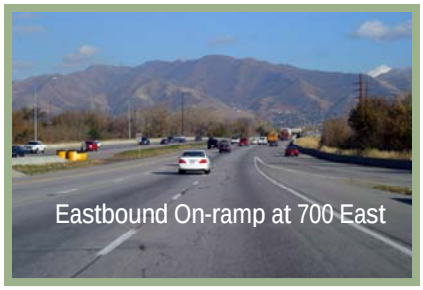
Initially, the Proposed Action involved repairing the infrastructure in the project area, such as rehabilitation of the bridge structures and of the existing pavement with a crack and seat overlay. However, when the extent of the bridge deterioration was taken into consideration (See Chapter 1 – Purpose and Need), the decision was made to replace the deficient bridge structures, rather than rehabilitate them. The Proposed Action includes replacing the existing bridges located at 300 East, 500 East, 600 East, 700 East, 900 East, and Highland Drive with new structures.

Increasing Capacity

Initially, the project included making limited operational and safety improvements without increasing capacity, such as adding auxiliary /merge lanes to improve traffic flow. But with the projected travel demand for the design year of 2030 discussed in Chapter 1 – Purpose and Need, it was also determined that additional capacity should be included in the Proposed Action to relieve current and future congestion and to help meet the objective of providing LOS D on I-80 in the project area.

As indicated in Chapter 1 – Purpose and Need, the LOS for the project area for the year 2030 if additional capacity is not added would exceed LOS D from 700 East to 1300 East (138,900 vpd) and exceed LOS E between State Street and 700 East (157,500 vpd). The addition of a general purpose lane in each direction would provide LOS D between 700 East and 1300 East through 2030. Even with the project, I-80 between State Street and 700 East is anticipated to exceed LOS D by the design year of 2030; but without the additional capacity, this segment would exceed LOS D by the year 2015. Therefore, a new general purpose lane in each direction was included in the Proposed Action, to be built within the open median so as to not require additional right-of-way. See the *I-80; State Street to 1300 East Traffic Operations Analysis* in Appendix A.

Improving Operational Deficiencies


Eastbound On-ramp at 700 East

Auxiliary/Merge Lanes

The Proposed Action includes adding auxiliary/merge lanes from the eastern on/off ramps at the State Street interchange to the western on/off ramps at 700 East interchange and again from the 700 East eastern entrance/exit ramps to the eastern on/off ramps at 1300 East. These lanes are in addition to the new general purpose lane so the typical section would consist of four general purpose lanes and an auxiliary lane in each direction. The auxiliary lanes would assist in reducing existing and future traffic congestion and improving traffic flow by providing ample space for merging maneuvers. See Figures 2-1 and 2-2.

Operational Improvements to the Interchange Ramps

Based upon the finding that vehicle queuing on the on/off ramps was backing onto the mainline and resulting in congestion (see *Traffic Operations Analysis* in Appendix A), the ramps at the State Street, 700 East, and 1300 East interchanges would be extended to include longer acceleration/deceleration lanes for added storage capacity. This would require additional bridge structures over 600 East for the westbound on-ramp and the eastbound off-ramp at 700 East and over Highland Drive for the eastbound on-ramp at 1300 East to carry the additional length. There would also be slight reconfigurations of the ramps to adjust for superelevation and improved access needs, most especially where the ramps meet I-80. See Figure 2-2.

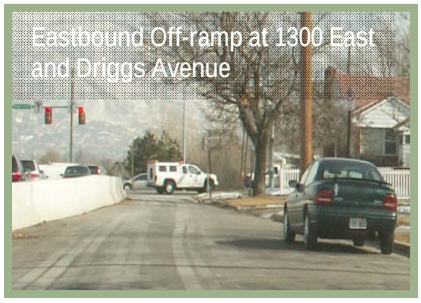
Stormwater drainage

The Proposed Action would include improvements to the drainage system in the project area to correct the existing deficiencies in the drainage system and to accommodate the anticipated increase in stormwater from the increase in impervious surface. Existing drains would be cleaned, repaired, and/or relocated, if relocation is necessary due to changes in the bridge structures and pavement profile. Stormwater runoff originating on I-80 between State Street and Highland Drive would be directed to an existing underground conduit running along I-80 on the north that drains into several interconnected detention ponds located near I-15, west of the project area. Stormwater runoff originating on I-80 between Highland Drive and 1300 East would be directed into the existing Salt Lake City drainage system that currently empties into Parley's Creek by way of a new detention basin planned for placement within the loop of the 1300 East westbound on-ramp at Sugarhouse Park. See Figure 2-2. Both drainage systems currently handle the existing runoff (except for that which part which cannot access the existing systems due to the identified drainage deficiencies) and would have sufficient capacity to handle the anticipated increase in stormwater runoff.

Safety

The Proposed Action would address safety concerns as outlined in Chapter 1 by adding auxiliary/merge lanes and lengthening acceleration/deceleration lanes to improve traffic flow and also by utilizing a typical section that meet current American Association of State Highway and Transportation Officials (AASHTO) guidelines for lane widths, shoulder widths, medians, and clear zone infringements. See Figure 2-1.

Additional Considerations



Closing Driggs Avenue

Realignment of the eastbound off-ramp at 1300 East is needed to provide additional storage capacity for vehicles exiting I-80 and to address traffic conflicts between the 1300 East eastbound off-ramp and Driggs Avenue. See Figures 2-2 and 2-3. Both roadways connect to 1300 East within ten feet of

each other. Currently, left and right turning movements from the off-ramp interfere with local traffic entering and exiting Driggs Avenue.

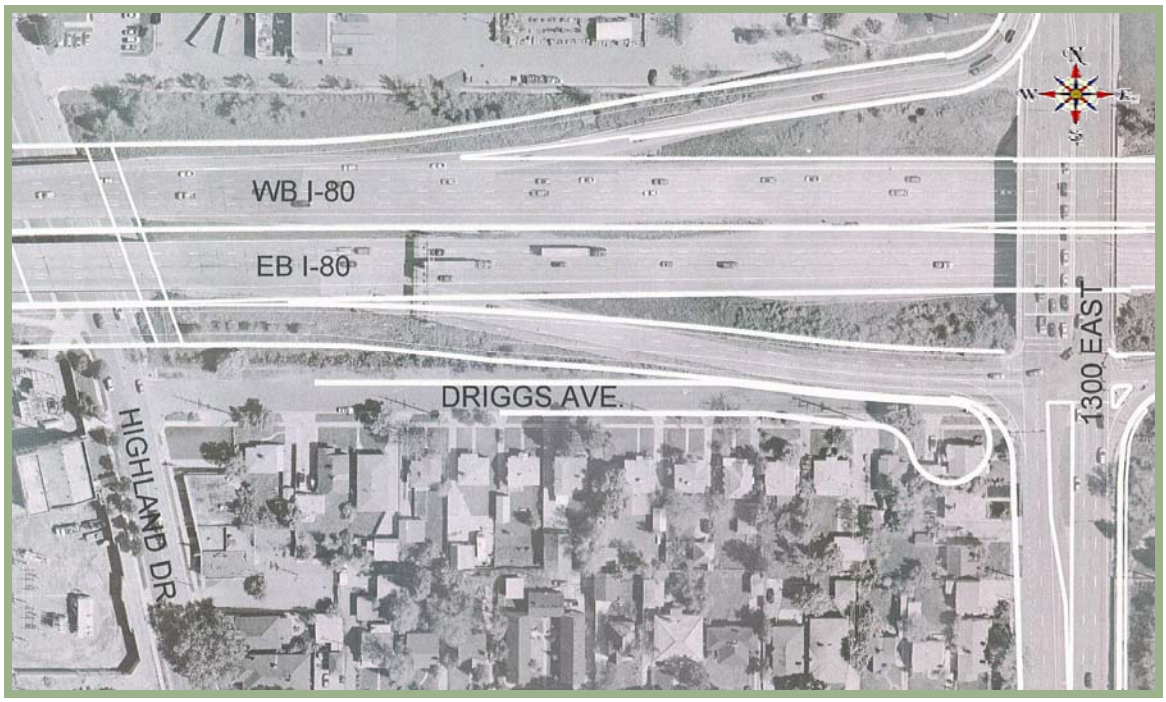


Figure 2-3. Proposed Cul-de-sac (Closure of Driggs Avenue 1300 East Access)

Replacing Existing Highland Drive Bridge Structures and Adding New Bridge

The Highland Drive bridge structures currently span approximately 250 feet in length, which encompasses both the Highland Drive roadway and what was previously the Wilford Brickyard Spur of the Denver and Rio Grande Western Railroad. The shortening of the Highland Drive Bridge would fill in the area beyond the western sidewalk, but would not impact either Highland Drive or the north-south pedestrian access under the bridges. See Figures 2-4 and 2-5.

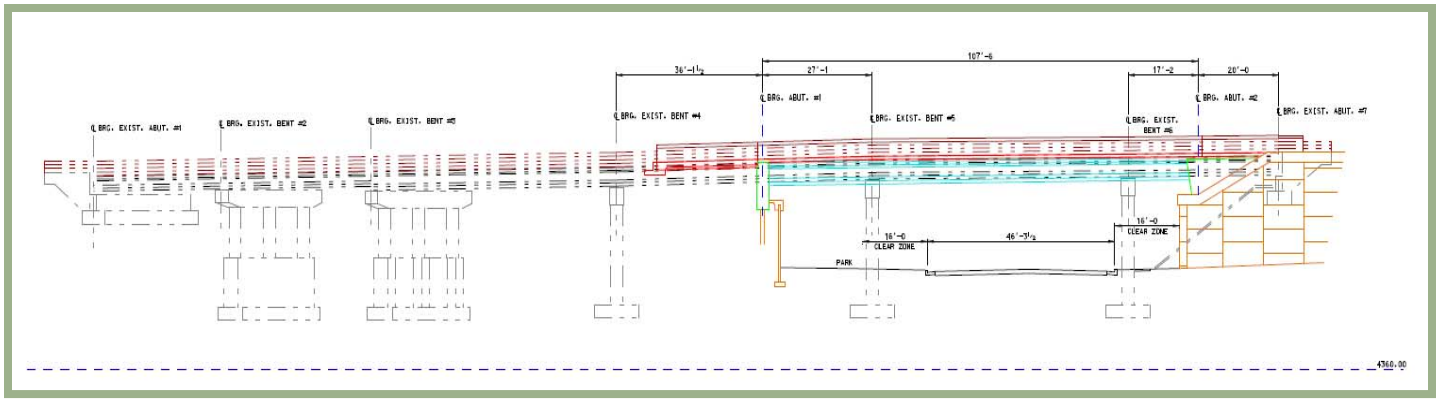


Figure 2-4. Existing (Black) and Proposed (Color) Highland Drive Bridge Structures

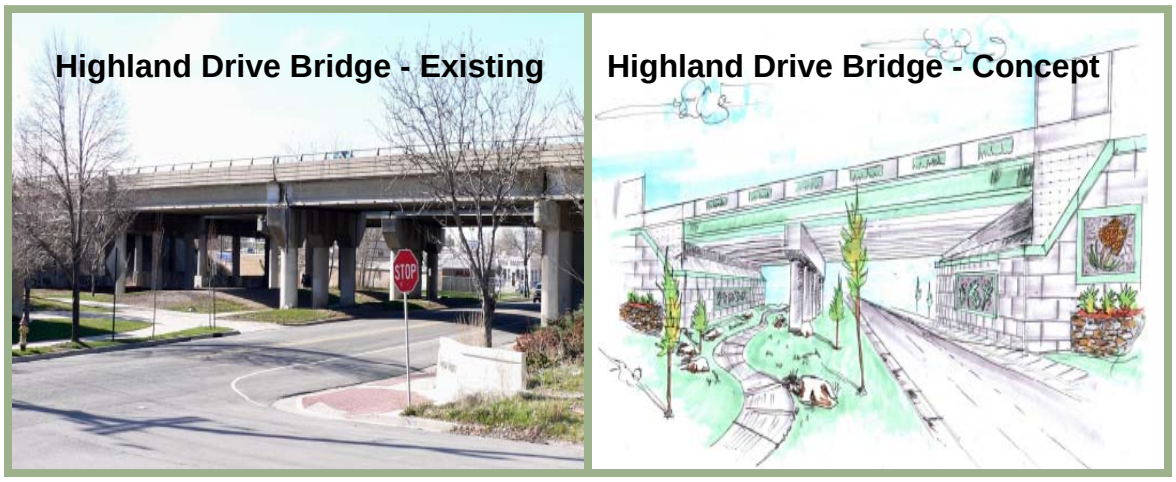


Figure 2-5. Proposed Modifications to Highland Drive Bridge Structures (Visual Concept)

The Proposed Action would also construct a new bridge structure over Highland Drive to carry the modified 1300 East eastbound off-ramp. This new structure would impact Elizabeth Sherman Park in that it would extend over the park and would require relocation of the existing sidewalk. The expected impacts of the new bridge structures are discussed in Chapter 3 – Affected Environment and Environmental Consequences. See Figure 2-2.

Retaining Walls/ Noise Walls

The Proposed Action also includes retaining walls to be used as necessary to minimize right-of-way acquisition needs. See Figure 2-2. It also assumes that noise walls would be built along the mainline where appropriate, both as separate structures and in conjunction with the retaining walls. An analysis of noise impacts from the Proposed Action (including recommendations as to potential noise wall locations) is presented in Chapter 3 – Affected Environment and Environmental Consequences – Noise.

2.1.2 No-Action/Maintenance Alternative

The No-action or Maintenance Alternative assumes that only short-term restoration activities designed to maintain the continued operation of the existing roadway facility would be implemented. Such activities along I-80 would include pavement rehabilitation and the remediation of the deterioration of the structures (which would potentially include replacement of structures that become no longer salvageable, while still utilizing the existing configurations and dimensions).

2.1.3 Transportation System/Demand Management Alternative

Transportation System Management (TSM) strategies are used to more efficiently utilize existing transportation facilities by managing traffic through access (ramp metering, signal timing, and bus signal priorities), designated travel lanes (high occupancy vehicle (HOV) lanes, reversible and "breakdown" lanes, and transitways), and information management (freeway diversion and advisory signing). Transportation Demand Management (TDM) strategies seek to decrease the

demand by encouraging multi-modal transportation, i.e., carpooling, bicycling or use of the transit system, and by promoting alternatives to peak hour travel, i.e., flexible work hours and telecommuting.

2.1.4 Transit Alternative

The Transit Alternative consists of reasonable and feasible mass transit options (bus systems, rail, etc.), even though they may not be within the existing funding authority. The Transit Alternative would include such improvements as additional bus service and additional light rail lines in the project area and/or on I-80 itself beyond that which is already planned.

State, regional, and local transit transportation plans were taken into account in the development of the Proposed Action. This area is currently served by several bus routes, namely; Routes 7 and 11 running north/south along 1300 East; Route 8 running north/south along Highland Drive (1100 East); Route 9 running north/south along 900 East; Routes 21, 27, 32, and 44 running north/south along 700 East; Route 10 running north/south along 500 East; Route 15 running north/south along 300 East; Route 22 running north/south along State Street; and Route 30 running east/west along 2100 South. The Utah Transit Authority (UTA) anticipates implementing changes to the public transportation system by consolidating routes[1], increasing the frequency of bus routes (especially during peak hours), and using the same daytime routes (albeit with less frequency) during night service. See Figure 2-6 for a map of the proposed future transit system, showing the proposed routes and frequency for bus and light rail service.

Transit plans in or near the project area include commuter rail running north and south from Brigham City to Payson (perpendicular to I-80 just west of the project area) and a light rail spur going east-west from the eastern terminus of the proposed West Valley Line[2] near I-15 to 1100 East in the Sugarhouse District. There are also plans to institute a Bus Rapid Transit (BRT) line along 1300 East from the University of Utah to 12300 South in Draper.

[1] Route equivalencies: Route 7 – Routes 33 and 213; Route 8 – Route 211 and Route 320 (fast bus); Route 9 – Route 209; Route 10 – Routes 205 and 207; Route 11 – Route 213; Route 15 – Route 203; Route 21 – Route 320 (fast bus); Route 22 – Route 200; Route 27 – Route 213, Route 307 (fast bus), and Route 320 (fast bus); Route 30 – Route 21; Route 32 – Route 307 (fast bus); and Route 44 – Route 209, Route 307 (fast bus), and Route 320 (fast bus).

[2] A Draft Environmental Impact Statement (EIS) has been prepared and circulated, but no decision document has yet been issued.

2.2 ALTERNATIVES ELIMINATED FROM CONSIDERATION

As discussed, all alternatives that would not satisfy the purpose and need of the project, as set forth in Chapter 1, were eliminated from further consideration as a stand-alone alternative, including:

2.2.1 No-Action/Maintenance Alternative

The No-action/Maintenance Alternative would meet the project purpose and need by addressing the infrastructure deficiencies in the pavement and bridge structures (albeit on a piecemeal and emergency basis), but it would not address traffic congestion and safety on I-80 nor would it accommodate future travel demand. The No-action/Maintenance Alternative acts as a baseline alternative for comparison with the impacts of any build alternatives considered. It is therefore carried through this ES.

2.2.2 Transportation System/ Demand Management Alternative

The Transportation System Management/Transportation Demand Management (TSM/TDM) Alternative, as a stand-alone alternative, would not address the needs of the project in that it would not address the infrastructure deficiencies on I-80. Due to the nature of the identified needs for the roadway, any potential alternatives that did not include effecting repairs on the roadway would not meet the purpose and need for the project as to the infrastructure deterioration; however, the Proposed Action includes elements of Transportation System Management (TSM) and Transportation Demand Management (TDM) strategies, where appropriate. This alternative was not independently evaluated as to its ability to accommodate projected 2030 traffic demand.

2.2.3 Transit Alternative

The Transit Alternative, as a stand-alone alternative, would not address the needs of the project in that it would not address the infrastructure deficiencies on I-80. Due to the nature of the identified needs for the roadway, any potential alternatives that did not include effecting repairs on the roadway would not meet the purpose and need for the project as to the infrastructure deterioration; however, the Proposed Action takes current and future transit plans that impact the project area into account, with the Proposed Action not impacting existing facilities nor precluding future additional bus routes or planned light rail lines.

This alternative was not independently evaluated as to its ability to accommodate projected 2030 traffic demand, but a comparison of ridership figures on Route 30 (which runs parallel to I-80) indicates that all but one trip currently run at below-capacity; therefore, it is unlikely that additional buses or bus routes in the project area would have any impact on traffic congestion on I-80.